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Some Uses of Flowers.

AN article on this subject by the learned agriculturist, Pierre Joigneaux, originally published in the *Journal de la Ferme*, founded by him, and since his death reproduced in the *Revue Horticole*, has suggested some thoughts about the uses of flowers and the part which they play in our lives. Monsieur Joigneaux claims that the love of them is one of the important differences between man and the brute, but, unfortunately, modern science reveals that, after all, the primary cause of the color and fragrance in flowers was to make them attractive to birds and insects; and as the Poppy-bee and Australian bower-bird manifest quite as keen an appreciation as we do of their decorative value, the Frenchman's theory has no more substantial basis than the vainglorious assumption that the universe was made for man, and that he is superior at all points to other created things. But admitting all this, no sufficient reason why we should disparage or undervalue any pleasure is to be found in the fact that our lowly relatives, in their humbler way, can enjoy it, too.

It is an open question if the delight of the eye can ever be reckoned among the intellectual sensations, but whether the power to appreciate beauty is classed among our higher or lower faculties, the truth remains that flowers are relished and employed by man for ornament, even in his savage state, and this taste is not outgrown, but rather strengthened, as he advances in refinement, until in the great cycle of development the most highly organized civilization again touches the barbarian plane, in its love for sensuous enjoyment. The gratification of the human eye and nose being presumably more elevated than the joy of the donkey in his Thistle, or the humming-bird in its Bignonia, we are apt to plume ourselves upon this taste for flowers as an evidence of inward refinement, which it may or may not be, according to circumstances. A Nero may delight in his crown of Roses, while a Tarquin prefers to whip off the heads of his Poppies in a bloody dream of tyranny, without leaving much to choose between them in ethical quality. But, however this may be, the love of flowers has a charming sentiment about it which gives it a high rank among the material sources of satisfaction; and the tendency of their presence to brighten and cheer lives otherwise devoid of color and fragrance touches our sympathies and gives food for the imagination. Thus the row of flower-pots in a cottage-window appeals to us more than the stately conservatories of a rich man's dwelling; the child's garland of daisies more than the belle's bouquet; the lilies on a coffin more than the roses that surround the bride; yet all are appropriate and precious, and cannot well be spared.

But, apart from what might be considered mere sentiment, flowers have played a considerable part in the history of civilization. They have given standards both of color and form that have had from the beginning a profound influence upon the plastic arts. They were probably the earliest suggestion of color to man, and from their roots, as a natural source, were distilled the earliest dyes. The Egyptian column is a reproduction of the stem and blossom of the Lotus-flower, at first realistic in shape and hue, and later conventionalized into that noble and beautiful form which still exists in the capitals of their majestic temples. The volutes of the Greek Ionic order, the Acanthus-leaf of the Corinthian, were suggested by common weeds. Gothic art borrowed from the garden myriads of lovely forms that were carved in stone into undying wreaths of beauty. Even the Hebrew, so reticent in natural form, was permitted to use the Pomegranate as a design upon the garment of the high-priest. The goldsmith has fashioned flowers in gold and silver, the lapidary has turned jewels into their likeness, the smith has reproduced them in miracles of wrought iron, the sculptor has modeled them upon his pedestals and adorned his statues with their semblance, the painter has borrowed from them his choicest decorations. To the poet they have been an unfailing spring of suggestion, whether as symbols or as a theme for dainty verse; the wisest and the gayest of the bards having alike immortalized them in powerful rhyme. Wherever art exists, whether of form or thought, flowers have been a potent spell to conjure with.

Thus from the earliest ages the life of man has been enwreathed with their fair forms, crowning him at banquets, smiling at him from his walls, twining around the columns and altars of his temples. They have expressed his love, his joy, his worship, his regret, his poignant anguish, in reality and symbol. The Greek hung a wreath upon his mistress's door; he wreathed the wine-cup with Roses, the victor with Laurel, the poet with the Bay, the guest with garlands; he crowned sleep with Asphodel, and death with Amaranth. This universal use of flowers almost seems to justify the belief that a love for them is one of the original passions of the human soul. No one who gives a handful of wild blossoms to a street child, whose life has been passed on a desert of stone, can fail to note how eagerly they are taken, and how tenderly, almost reverently, they are treated. Do the flowers satisfy a genuine hunger of the heart, or is this one manifestation of that larger affection, that feeling of kinship with all living things, which, in its various developments, we call the love of Nature?

Perhaps, however, the kindest office of flowers to man has been to inspire him with a love of gardening, a humanizing pursuit wherein their pleasant companionship affords unwearied delight. Here is a homely pleasure for all classes of people, from the road-side cottager, with his handful of Pinks and Roses, to the grower of all rare and splendid exotics. Here is a pursuit which beguiles the young into study and the old into congenial labor; which offers profound problems to the wise and simple pleasures to the unlearned; a resource which never fails; a delight which never stagnates into monotony, but leads on to new and ever-expanding fields as the seasons change and the years grow.

IT is to be regretted that a small fund cannot be raised to purchase Poe's cottage at Fordham and remove it, for perpetual preservation, to one of the new parks near by. "Until last autumn," says a recent writer in the *Epoch*, "the cottage had been kept in comparatively good repair by a widow, a woman of culture, who took great pride in the place and lived in the house. But the lady moved away on account of ill health, and a 'To Let' sign is now tacked on the cottage. The wealthy residents of this neighborhood look upon the little pastoral home as an eyesore, and are tired of answering the many questions constantly asked regarding it. The cottage looks forsaken; the doors are barred; across the windows are nailed boards, and everything about the place is going into decay. As it was opened for me a few days ago, there was a musty and damp smell about every room. The thin floor is giving way, and the ground beneath exhales a malarial dampness through the room where Poe wrote, and even the humblest people will not live in the house, owing to its unhealthy condition. I was told that the place was still visited by nearly a thousand people each year during the spring, summer and autumn months, and everything is pointed out: the room where Poe wrote his 'Annabel Lee,' and where, on January 30th, 1847, death released his child-wife, Virginia Clemm, from her period of suffering. But the historic pastoral cottage has seen its day, and, with the march of progress, it will soon be demolished, and its existence serve only as a memory, and to be told of by the 'oldest inhabitant' in the years to come." This is a very new country, and it will grow into a riper and more mellow age if some of the links which connect it with its earlier history are preserved. We therefore commend this interesting cottage in its distress to the literary men of New York, in the hope that some existing club or some special association of public-spirited men may be induced to rescue it from threatened destruction.

The Story of a Suburban Place.—I.

IN one of the large suburban communities just out of Boston, something like ten years ago, there was a wild-looking piece of land that rose abruptly from the street. A fringe of houses stood along the highway, but back of these there rose a wilderness of ledges and woods. An unkempt lane branched from the street here and curved up the slope. At the point where this stony byway disappeared from view, looking up from the thoroughfare, a picturesque house snuggled up against a Pine and Savin-covered ledge.

Few persons then appreciated the real value of land like this, and population for the most part had kept to the level ground. The lot was long and somewhat narrow, running from the lane beyond the point where it curved around nearly to a parallel with the highway below, and running down-hill to within a hundred feet or so of the street. It had an area of something over 30,000 feet, and was bought at a moderate price.

The land, mainly a rugged ledge, sloped abruptly both to the eastward and southward. A former owner had cleared most of the wild growth away, with the exception of that about the ledge, and had planted an orchard on the southern slope, where the neglected trees were making a slow growth. The land on either side had, for the greater part, also been cleared, but was mostly covered with a young second growth. The country, to the northward, was an almost unbroken wilderness of wooded hills, from which most of the timber had been cut twenty years before. This wilderness, near the lot, had been laid out in streets, which rambled in pleasant curves among the hills, and a little grading and blasting had been done, but the grades, for the most part, were fearful in their steepness.

Suburban street-railways were then unknown, and the nearest steam railway was almost a mile away from the greater part of the region, and the property had lain idle; but over the railway that accommodates this suburb there are now probably more trains in one hour than then passed over the line in the course of the entire day.

A third of the lot near the lane was sold to a friend for the sake of having a good neighbor, with the drive-way reserved to give access to the remainder. The site for the house was easily chosen. The considerations were, beside accessibility, the best possible view, together with plenty of sunshine and shelter from the cold winds. The southerly slope, close to the ledge, seemed an ideal situation. The hill, rising behind, cut off the sweep of the northerly and north-westerly winds, while the prevailing winds of summer were from the southward and south-westward. The view was superb, commanding an uninterrupted range over something like two-thirds of the horizon.

The architect entered happily into the spirit of the scene, and made the best of his opportunities. The house composed admirably with the location. It was a two-story cottage of eight rooms, with basement of stone, furnished by blasting out the ledge for the cellar, the greater portion of three sides of which were above ground, on account of the slope. The wide-angled gables and broad eaves gave the house something of the Swiss character that harmonized with the rugged location. It was decidedly picturesque, with the merit of no uneasy striving for picturesque effect. Not a little amusement was afforded by the comments of towns-people who watched with interest the building operations. "No two windows alike, and not one of them over another. It's a sight to behold," said one. "How are you ever going to get there?" "How do you expect to get water on top of that hill?" were other queries.

The approach, however, was gradual enough, around by the lane and the drive-way, though looking directly up from the highway the house did tower up startlingly. The grocer's men and the like, together with casual visitors, always came toiling straight up across lots, and were pretty well winded on reaching the door. But, in spite of the commanding view and the impression of towering height conveyed by the almost precipitous relation of the site to the street below, the elevation was only about sixty feet above sea-level, and something like fifteen feet less than that above the main street. As to the water question, since the source of the town-supply was about twice as high as the ridge-pole of the house, no difficulty was experienced.

The house proved as pleasant and convenient as it was unconventional. The windows were made broad, so as to admit as much light and sunshine as possible. More wall-space was gained in the rooms, and concentration of light, together with the effect of bay-windows without the expense, by bringing the windows in the living-room and dining-room close together at the corners. The hall was made large, with a fire-place opposite the door, and an entrance to the sitting-room by double sliding doors that were seldom closed it was practically a portion of the living-room, which thus was about doubled in size. A projection of one story, which gave a pleasant variety to the exterior, was devoted to a small library and study, but there proved to be some objections to a study off the hall, even in that quiet neighborhood, and the establishment of a den in a portion of the yet unfinished attic space is contemplated.

The windows were left without blinds, which are rattling nuisances. In that breezy place the sunlight seldom becomes oppressive, and in the summer sufficient shade is given by awnings, which aid in agreeably clothing the house. The common American awning, however, is a hot-air trap, holding the heat in its hood like a hot-air balloon. Therefore the example of Mexico and other southern countries was followed by making the awnings a foot or so wider on each side than the windows and not closing in the sides, which gave ample shade and allowed the hot air to escape freely.

It seems a pity, however, that the most of us are debarred from making application of the experience gained in building a house by building over again and carrying out the ideas thus gained. One thing learned is that all windows should be casements, after the sensible continental European fashion, so that the benefit of the full air-space of the window-opening may be had whenever desired. We Anglo-Saxons have carried our sliding window-sashes into all parts of the world that our race has colonized; even the most unsuitable climates, like Bermuda, the British West Indies and California. In those warm climates, where all the air circulation is needed that can be obtained, half the window-space at least must thus be closed by glass. The same holds true of our northern American summers, which, with their humidity, often give us the additional annoyance of causing the sash so to swell in its frame that the utmost exertion cannot stir it, thus depriving us of fresh air altogether. It is possible now to construct casement-windows so as to be as tight as needed. The ideal window is a double casement, with the outer one so constructed that the frame will hold glass in the winter, to be removed in summer and replaced by wire netting to keep out the flies and mosquitoes.

The lower story of the house was clapboarded, and the upper portions were shingled, and the whole painted. The colors are harmonious, and the paint has stood phenomenally well, looking practically as fresh to-day as when applied nine years ago. But if the house were to be built again it would be plas-

tered externally. In this way a more substantial effect is gained, and the considerable expense of periodical repainting may be avoided. It would also greatly increase the warmth of a house in winter. Plaster has been proven to stand our climate admirably, and it seems the best possible material for country-house exteriors. A variety of effects may be gained by using either rough-cast or smooth plaster-work, or by mixing any desired coloring matter, like brick-dust, for instance, in the plaster. The surface may also be colored by wash or paint. Painted wood when weather-beaten looks shabby; painted plaster becomes picturesque with its delicate tones, like the effects in Spanish-American cities. Another advantage is the freedom with which climbers cling to the surface, while they have usually an unconquerable repugnance for painted wood. Next to plaster comes a shingled and unpainted exterior, which, assuming very quickly a soft stone-gray, makes a house look as substantial as stone, and gives it a rightful place in a rural landscape. Climbers will cling readily to the shingles. Pleasant effects are also gained by the use of stains on the shingles, which may be easily renewed, or, better still, may be left to blend under the weather. But a shingled exterior should never be tidied up with paint. Clapboards are almost hopelessly prosaic in effect.

The piazza on the easterly side of the house makes substantially an outdoor room for summer afternoons and evenings. It is of generous width, and covered at the entrance. Adjoining the living-room, which communicates with it by casements, it is roofless, but an awning affords all necessary shade. A piazza should never be permanently covered on the sunny sides of a house where there are windows.

Here on the piazza there are blossoming house-plants, together with a large Oleander in a tub. A rug is spread beneath the awning; there are tables and chairs, and supper is sometimes served here. The view is a source of unwearying delight. So abruptly does the southward slope fall off that the immediate foreground is not visible except from the edge of the balustrade, making the effect of the piazza much like that of the hurricane-deck of a steamboat. The range is from Nahant to the eastward, around to the Menotomy Hills, in Arlington, to the westward. The central point is the State House, with its glittering gilded dome, five miles away as the crow flies. The great city spreads on all sides, its political limits indistinguishable as it merges in the mass of the Greater Boston that extends to our feet. Our hill-side forms part of the ancient rocky coast of the Boston basin, and a rise of but a few feet would again bring the salt-waters of the bay up to its former shores. It is hardly more than a stone's-throw down into the level of the wide alluvial plain over which the tides once rolled. This plain spreads away to the blue gleam of the Mystic. When the house was built it was an almost unbroken pastoral expanse, dappled here and there with trees, and broken with woodland areas, the successors of the noble Oaks that went long ago to form the timbers of the East Indiamen launched from the Medford ship-yards. Last year all but a patch of the woodland vanished before the axe, for it was there that the Gypsy Moth began its ravages, and the remedy was to destroy the trees.

Very soon after the occupation of the hill-side the plain began to be checker-boarded with streets, and houses began to dot themselves over it. The effect of these packing-box structures was most discordant at first. But as they multiplied, their isolated ugliness vanished as they became merged in the mass that soon covered the ground and joined itself to the sea of buildings that spreads in broad undulations over the hills and valleys of our rapidly growing suburban city, blending indistinguishably with the neighboring municipalities that ultimately must become one. The commonplaceness of urban edifices gives way to a striking impressiveness when beheld in a mass, with a confusion of roofs and gables intermingled with the verdure of tree-tops that nearly bury them for half the year, visibly symbolizing the efforts of Nature to overwhelm the works of man and reconquer the ground he has made his own.

There is one broad space where the sea of houses holds back—a wide expanse of salt-marsh like a grassy lake. At times the silvery threads of its embroidering creek swell and spread until the marsh becomes for a brief time a veritable lake—a beautiful vision as ephemeral as the sunset's glow.

The view includes some notable historic details. Less than a mile away by the Mystic's side may be seen the roof and chimneys of a brick dwelling, the oldest house in New England, and in the United States outside of the once Spanish domains of Florida and New Mexico, the mansion built for Governor Cradock, but never occupied by him. Near by was launched in 1632 the Blessing of the Bay, the first vessel built in New England. Beyond the Mystic rises the picturesque old pre-revolutionary powder-tower in Somerville.

In Charlestown the great shaft of Bunker Hill monument is rivaled by the more slender chimney of the Navy Yard machine-shop. About the huge bulks of the grain-elevators in Charlestown and East Boston are congregated the masts of the shipping in the harbor; the harbor itself cannot be seen from here, but the long blue line of the Atlantic shows over Nahant from the ledge above. At night the red glimmer of Egg Rock light may be seen from the piazza, and from the upper windows are visible the steady glow of the lighthouse on Long Island head, and the intermittent flash of Boston light at the harbor mouth.

The contrast between the life and stir of the metropolitan landscape in front, where the city is backed by the majestic wave-lines of the Blue Hills, is great. The smoke rises from countless factory-chimneys; the fleecy steam-drifts mark the flying shuttles of five lines of railway; the incessant hum of traffic comes faintly to the ear; then the almost absolute seclusion roundabout, with the sylvan wilderness rolling away behind. By our neighbor's house, just below and across the way, the pioneer of our friendly group of three, there nestles a pretty lakelet among the fells, its calm surface glimpsed from the piazza above the tops of the Apple-trees that happily cut off the sight of a row of prosaic dwellings. This lakelet, which occupies a former swamp and forms a reservoir for the great factory of our suburb, occupies the hither end of a valley along which there is a vista to some hills—far enough away for a soft haze to intervene—that stand in a park now private, though likely some day to become a public domain.

The changes of the day and night lend constant charm to the landscape from this piazza—its aspects under sunshine and cloud, under summer verdure and winter snows, the flushing tints of spring-time leafage that seem prophetic of the vivid tones of autumnal glory; the sweet languor of summer nights with a mystery of darkness below and above, the city lights far and near repeating the firmament's constellations almost as though mirrored in a lake, and the enchantment of the moonlight scenes, under which the plain sometimes becomes transformed into a white sea of mist, with the dim and vaguely outlined bulks of trees and buildings rising darkly from the surface like the islets of an archipelago.

Boston. *Sylvester Baxter.*

Notes of a Summer Journey in Europe.—X.

FROM Berlin an excursion was made to Copenhagen with the object of comparing the dendrological collections of this northern station with our own, so that, if found worth while, arrangements for exchanges might be made. Although Copenhagen is situated in a latitude which corresponds to that of north-eastern Labrador, it enjoys a somewhat insular situation and reaps much benefit from the modifying influence of the great Gulf Stream. From the character of the vegetation I was prepared to find indications of a winter climate somewhat similar to, or a little colder than the winters in eastern Massachusetts. It was quite a surprise, therefore, to find here trees of the English Walnut, good specimens of Sequoia gigantea, to be told that Vitis vinifera matured fruit in some favorable situations, and to see thick borders of Fuchsia Riccartoni and F. gracilis, two or three feet high and in full bloom, which remain out all winter with only a moderate covering of leaves and rubbish. Even the Fig can be grown against walls if afforded winter protection. When the mercury falls to about zero of Fahrenheit at Copenhagen the weather is considered extremely cold. Therefore it is possible to grow here many trees and shrubs which will not survive the winters of eastern Massachusetts.

There are practically two botanic gardens in Copenhagen, each being under the control of separate institutions. These are the University Botanic Garden and the gardens of the Royal Agricultural and Horticultural Academy. The first presents no novel features and few remarkable plants, or plants which are not to be found in the other. It was of interest to note here both the typical and the yellow or amber-colored fruited Choke Cherry (Prunus Virginiana), sixteen or eighteen feet in height and with thick single stems. In many parts of America the Choke Cherry is counted as a mere shrub, but in some places it really becomes a neat single-stemmed tree, so that, from its habit, it might almost be counted a distinct species from the shrubby race. The yellow-fruiting form is apparently quite uncommon, and to it has been given the varietal name of erythrocarpa. In this garden there are fine shrubs of Jamesia Americana, while handsome masses of the so-called Oregon Grape (Berberis Aquifolium) were bearing an abundance of fruit. Lonicera alpigena, about seven feet in height, was very showy, with large rich red fruit. The plant which inter-

ested me most was a flowering specimen of what I at first took to be a white-blossomed Potentilla fruticosa. It was without name, and no information could be obtained concerning it. In making inquiries afterward at various botanical establishments and of persons eminent for their knowledge of such things, no one seemed to know anything about it. The plant was seen again in the Edinburgh Botanic Garden. There seems to be no doubt that this is the P. glabra of Loddiges, or what has also been called P. Dahurica, small colored figures of which are to be found in *Loddige's Botanical Cabinet*, t. 914, and in *Gartenflora*, vol. ix., t. 278. It is said to have been introduced from Siberia, and is, therefore, a plant which should be perfectly hardy in all northern gardens. It was early introduced into cultivation (in England as early as 1822, according to Loudon), and it is hard to tell why it should have been allowed to become almost lost again. It grows to about the same size as P. fruticosa, from which it chiefly differs in its white flowers, and in being smooth in all its parts instead of pubescent or hairy.

The gardens of the Royal Agricultural Academy were established about thirty-two years ago, and are now mainly under the general charge of Dr. C. Hansen. Necessarily they include much more than the other, and, besides the natural species of ligneous plants, portions are devoted to experimenting with and growing of fruits, vegetables, cereals, etc., work necessary to an institution of this kind. Here, also, new varieties are tried, practical tests of the value of manures made, and other experiments carried on which may prove useful to the students.

This garden is interesting and instructive in various ways, and the grounds and specimens present a very creditable appearance, especially considering the very moderate sums allowed for their maintenance. For popular instruction there are separate beds made for plants of economical interest, so that the different species may be seen together, which are valuable for any particular quality. In this way instructive object-lessons are given in textile, food producing, sugar producing, gum and oil producing, aromatic, tinctorial, medicinal, poisonous, and other classes of plants likely to interest not only trained students of science, but every one at all interested in these subjects. All the species are very distinctly and neatly labeled, each with its botanical and common name, its original habitat and the peculiar property or quality for which it is noted. A feature, not often carried out to such an extent in other economic collections of this kind, is the exhibition of the seeds and sometimes of the products with the living plants. The seeds are first thoroughly dried, then carefully sealed in specially made jars, which are then placed in an inverted position on a suitable stand or support beside the living specimens. Characteristic fruits or products are also sometimes shown in liquid. Such a collection of bottles and jars with the plants does not give a pleasant aspect from the artistic point of view, but genuine educational advantages are thus afforded. Considering their limited area and how much ground is necessarily set apart for strictly practical or educational work, the grounds of the Academy contain a fair collection of trees and other hardy ligneous plants. Holodiscus (Spiræa) discolor, ariæfolia, has become a handsome bush, fifteen feet across and twelve feet high, and the mild moist climate has induced many other shrubs to grow in corresponding proportion. The plant given the name of our Smooth Sumach (Rhus glabra) was not that species, but seemed more like the Stag-horn Sumach (R. typhina), and may possibly be a hybrid between the two. This is mentioned here because the true typical R. glabra was not seen in any European garden visited by me, although in some gardens the cut-leaved variety (var. laciniata) is cultivated. R. typhina is common. The intermediate form, usually called R. glabra, also goes by the name of R. viridiflora.

Another very different species of Rhus is passing as Ampelopsis Japonica, but its trifoliate leaves, rooting stems and milky juice at once indicate that it is a Rhus very closely allied to, if not identical with, our Poison Ivy (R. Toxicodendron). This so-named Ampelopsis Japonica has been distributed as a novelty by a well-known English firm, and in Germany I found it planted as something choice to form a covering for the supports and sides of a much-used arbor.

The tips of the branches of the Plane-trees here seemed affected by some disease which caused injuries similar to that caused by the fungus in America.

The director of the garden has made some attempt at a geographical arrangement of his plants, and in the little space devoted to the flora of Greenland there are several woody plants which have been brought from that cold region. Perhaps the most interesting of these is a fruit-bearing specimen of an American Mountain Ash.

In labeling the trees white porcelain labels on iron stakes are much used, but plain zinc labels are also largely employed, while others of a more elaborate kind are furnished with a little map showing the geographical distribution of the species.

In this garden and vicinity there are fine hedges of English Hawthorn, Box, Privet, Hornbeam (Carpinus Betulus), and a beautiful close compact one, ten feet high, of the European Field Maple (Acer compestre).

One of Dr. Hansen's hobbies is conifers, and at the Arboretum, or Forest Botanic Garden, at Charlottenlund, several miles out of Copenhagen, he has been enabled to accumulate a larger collection of these than is possible in the city garden. This experimental arboretum only covers eighteen or twenty acres of ground. It is said to have been established over fifty years ago, and it is now practically a branch station of the Agricultural Academy. Although much crowded, some of the trees have attained a good size. Among other evergreens there are large and fairly well-developed examples of Sequoia gigantea, Abies grandis, Picea Sitchensis and Pseudotsuga taxifolia. The last is counted the fastest-growing. A tall specimen of Alnus glutinosa, with a trunk two and a half feet in diameter and the aspect of a sturdy Oak, is one of the finest trees on the place. Laburnums do well here, while such American plants as Ilex verticillata, Amelanchier Canadensis and Viburnum prunifolium are quite as well grown as any to be seen in cultivation. Of the conifers, the director's specialty, it is claimed that there are about six hundred species and varieties here. The plants are mostly still very small, and, of course, there is not room for any sort of development in size. Such an extraordinary number of so-called varieties is accounted for by the fact that extremely slight variations are recognized and propagated. Of Lawson's Cypress, for instance, there is said to be at least fifty-two different kinds. Most of these forms are of no particular value or interest except to a student or enthusiast. It is claimed that they vary in point of hardiness, but a greater difference would undoubtedly be found by selection from natural habitat.

The scope of these notes will not allow of a more extended notice of the Copenhagen gardens. While not differing enough from other gardens to make a long journey worth the while, they deserve a visit by any one interested in botany or horticulture who may happen to stray into this region.

The Beeches of Denmark are far-famed, and many fine Beech and Oak forests are frequently seen. It is said that there are only two species of conifers now indigenous to the country. These are the common Juniper (Juniperus communis) and the Yew (Taxus baccata), the latter being very rare and local. That the climate and soil of some parts of Denmark are suitable to the growth of trees and arborescent vegetation is shown in a fine forest at Klampenborg, a few miles north of Copenhagen. Here the common European Silver Fir (Abies pectinata) is to be seen with beautiful stems a hundred and twenty feet in height and three or four feet in diameter as high as one can reach from the base. These trees were originally planted alternately with rows of Beech and Oak.

Practical forestry receives some attention in Denmark. Large areas of the waste lands are annually planted with the little Mountain Pine (Pinus montana), so that eventually these now worthless tracts may prove of value, and, in the process of nature, obtain some degree of fertility.

Arnold Arboretum. *J. G. Jack.*

Plant Notes.

Erica hyemalis.

FIFTY years ago there were between three and four hundred species and varieties of Cape Heaths in cultivation in England. They were popular with amateurs, collections of them being as frequent almost as collections of Orchids are now. Few of these Heaths remain in our gardens. As a rule, they are disliked because they require too much attention for the ordinary collection, while for specialists the genus has apparently lost its charm. There are, however, at least two Ericas which have kept a leading place among popular garden-plants—namely, E. hyemalis and E. gracilis. With regard to the former, it may be said with truth that no other plant is grown in such enormous quantities for the London market. At least a dozen nurserymen might be named whose annual output of this one Heath amounts to from twenty to thirty thousand plants each. Such a specimen as that represented in the illustration on page 137

may be bought in Covent Garden market about Christmas-time for eighteen pence. The plants are usually in five-inch pots, and the shoots average a foot in height. The flowers perish almost as soon as the flowers—that is, all those which find their way into the window of a house or into a small greenhouse. And this accounts for the enormous

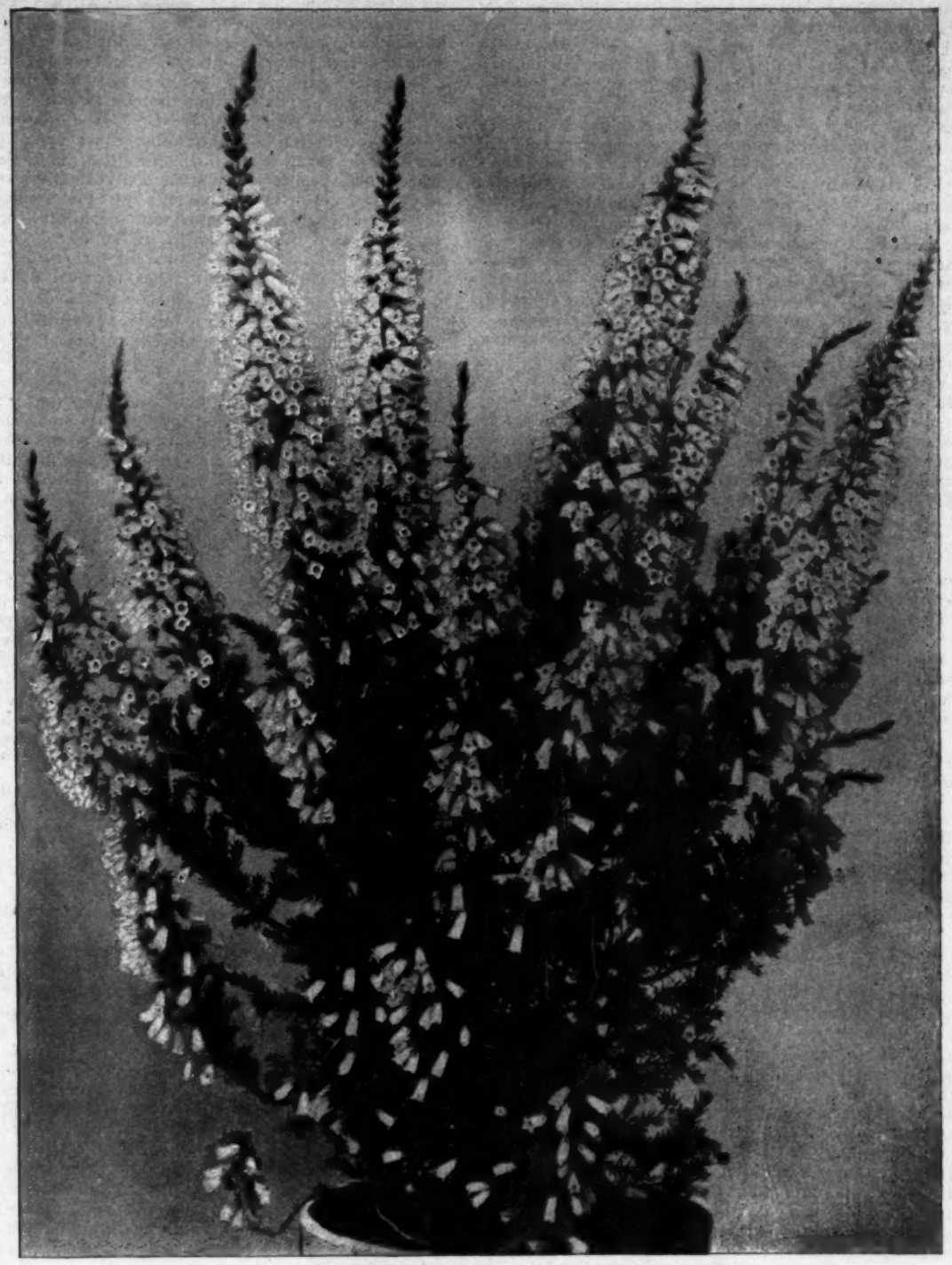

Fig. 21.—Erica hyemalis.—See page 136.

remain fresh for at least a month. The popularity of this Heath is thus easily accounted for: it is cheap, very pretty when in flower, and lasts just long enough to satisfy the masses who like window-plants and change. The plants number disposed of every year. In England E. hyemalis is certainly one of the most valuable market-plants ever introduced.

It is strange that a plant which has enjoyed an excep-

tional popularity in England for something like fifty years should never have been figured in any English publication or work until now. I have not been able to trace the origin of the plant, nor find any picture of it in any book to which I have access here. Nor can any of those who have paid attention to garden Heaths assist me. The venerable Mr. John Fraser, of the Lea Bridge Nursery, once famous for its Heaths and New Holland plants, informs me that he purchased three plants of it from the Pine Apple Nursery about forty years ago. Cultural directions for this and E. gracilis, I find, were given in the gardening papers of thirty years ago. Probably the plant is a seedling or hybrid; at any rate, it is not represented among the wild specimens in the Kew Herbarium. It is not mentioned by Andrews in his beautifully illustrated work, *Colored Engravings of Heaths*, published in 1809. Singularly enough, Andrews states, under E. Linnæa superba: "This fine plant has ornamented various collections for the last five or six years. In growth it is luxuriant, as we have frequently seen it two feet high with numerous long-flowering branches at Covent Garden among many of the most beautiful (if not most rare) Ericas, which are exclusively cultivated for that well-known emporium. It may certainly be considered as one of the finest variations of E. Linnæa, and as such its hyperbolical specific title may serve to distinguish it from most varieties." Were it not that the plant thus described is stated to flower in "May, June and July" I should have accepted this as being identical with our E. hyemalis. In Loddiges' *Botanical Cabinet* (t. 102) there is a figure of E. Linneana, which is there stated to "flower rather early in spring and is of pretty long duration. We consider it a very ornamental sort. The buds are in general formed before the winter, and if it is kept in a bad greenhouse, where the smoke escapes from the flues, the buds are very apt to blight. We have known them preserved exceedingly well in a frame, carefully attended to in winter." In my opinion, E. hyemalis is somewhere very near these two. In De Candolle's *Prodromus* both E. Linneana and E. Linnæa superba are referred to E. perspicua. This species, as now known, flowers from April to November. It was introduced from the Cape to Kew about one hundred years ago. Several varieties of it are known, and, if the *Prodromus* is correct, we may conclude that E. hyemalis is probably a winter-flowering variety of E. perspicua. It is difficult to believe that the raiser of such a plant would not have claimed some credit for it. So much for what we know of the origin of this beautiful Heath.

In its cultural requirements E. hyemalis is simple enough, but the grower must stick to those requirements or he will certainly fail. In the nurseries of Messrs. H. Low & Co., where about thirty thousand plants such as that figured are annually grown, the method of culture for this Heath is as follows:

Propagation.—Cuttings are selected in September or October from the branchlets which crowd the base of the plants. They are cut to an inch in length, and the lower half is carefully stripped of leaves. The cuttings are then pricked in well-drained seven-inch pots of very sandy peat-soil and covered with bell-glasses. The pots are placed in a north house, where the temperature is kept at from fifty-five to sixty degrees. The bell-glasses are removed and wiped inside every morning, and any pots which require water obtain it then. The bell-glasses must not be replaced until the water has drained off the cuttings. When struck, the bell-glasses are removed and the plantlets are gradually hardened off. After they have made about half an inch of new growth they are topped with scissors.

First Potting.—This is done in spring when the cutting-pots are shaken out and the plants placed three in a pot. The pots used are small, known here as thumbs (two and a half inches), and the soil is a mixture of dark peat and sand, equal parts of each. When potted the plants are placed in frames and kept close and shaded for a few days. After twelve months in trios, as above, the plants are ready for removal into separate pots. These are thumbs, as before; the soil used is the same as before, but less sandy. It is a good plan to stake the plants before they are shifted, a stout deal-stake five inches long being given to each. When potted, place the plants back in the frame. Pinch out the tips of the shoots again after a little growth has been made.

Final Potting.—If the treatment hitherto has been right the plants ought now to be sturdy little bushes with from eight to a dozen short shoots and a thick net of white roots. In December or January they may be potted into four or five inch pots. The soil must not be of the light brown character, such as is used for Orchids, but good black-brown heather-peat. It should be broken up roughly and mixed with silver sand. In potting the soil should be pressed down firmly with the hand. Potting-sticks should not be used. The frames are still the most suitable place for the plants, where they must remain till the middle of June, when they may be placed in the open. A position exposed to full sunshine all day is indispensable. Beds, say, four feet wide, formed of ashes, are best, the plants to be stood upon or half-plunged in the ashes.

Temperature.—This Heath dislikes artificial heat. If frost can be kept from it by protection, and if light can be given occasionally in severe weather, the plants will be much healthier than if fire-heat is used. At Clapton the Heath-frames are made of wood, span in shape, eight feet across, four feet high in the middle, with movable lights; a two and a half inch hot-water pipe runs once round the frame. The lights are removed when the weather is not cold, even in midwinter, except for a few weeks after repotting. Mats are thrown over the frames in severe weather. The golden rule to be observed is that fire-heat and a close atmosphere are distasteful to this Heath, and that sunshine and plenty of fresh air are its glory.

Water.—Don't water a Heath till it is dry, and then soak it, is the maxim with growers of these plants. Absolute dryness, however, is dangerous, and often fatal. The plants should not be allowed to "flag." In very dry weather it is advisable to look over the beds twice a day, watering those that are dry only. Manures, such as nitrate or soot, are given when the plants are in vigorous growth. Be careful in the use of stimulants, or the result will be strong shoots, but all "blind" in respect of flowers. Beside the type we have two varieties—namely, superba, larger-flowered, and alba, paler in color.

London. *W. Watson.*

New or Little-known Plants.

Clematis brevicaudata.

THIS pretty Asiatic species, figured on page 139 of this issue, is a decided acquisition to the climbing autumn-flowering plants which can be cultivated in northern gardens. Botanically it is closely related to the familiar Virgin's Bower of our eastern meadows, and, like that species, belongs to the section Flammula of the genus, distinguished by cymosely panicled, dicœcious, apetalous flowers with white spreading petaloid sepals and stout blunt anthers. It is a graceful plant with slender stems climbing ten or twelve feet high, puberulous, dark green, ternately divided leaves, their divisions long-stalked and divided into three ovate-acute leaflets sharply and deeply cut above the middle, entire and gradually rounded at the base, or three-lobed, and sometimes almost entire. The flowers are produced in ample pubescent panicles rather shorter than the leaves, and open during the first half of September; those of the pistillate plants are followed by abundant showy fruit with bright brown akenes covered with pale hairs and slender plumose tails.

Clematis brevicaudata was sent to the Arnold Arboretum from the Museum d'Histoire Naturelle, in Paris, in 1886; in the same year seeds were sent to the Arboretum by Professor Brooks, of the Agricultural College at Sapparo, in Japan, which have produced the same plant, although this species does not appear to have been found before in Japan. It

has also come to the Arboretum from the Späth Nursery, at Berlin, under the name of Clematis paniculata.

It flowers regularly every year in the Arboretum, and usually ripens an abundant crop of fruit early in October.

Our illustration is made from a drawing taken by Mr. Faxon from one of the plants in the Arboretum.*

C. S. S.

Cultural Department.

Should Farmers raise their own Vegetable Seeds?

UNDER the above title, in the Report for 1889 of the Pennsylvania Experiment Station, is given the result of one year's observations upon this question. No subsequent report has been made, although the experiment has been carefully continued upon the same basis. It is a somewhat common practice among farmers to "save seeds" from the vegetable-garden of such plants as seed readily the first year, and the practice is generally attended with the complaint that the varieties are not as good as they were originally. It is true that the fruits taken for seed are not carefully selected, and they are not gathered until the plants are past their prime condition. A careful seed-grower will, however, take the best fruits only, which practice tends to the improvement of varieties rather than their degeneration. Again, the farmer does not give the same careful cultivation to his vegetables, nor is he likely to have as rich a soil as the commercial seed-grower is certain to choose for that purpose. The subject seems worth some attention. The following is quoted from the first report:

"The question in its scientific aspect presents itself in the following form: Are seeds which have matured under high cultivation (as on our best seed-farms) better for our less enriched farm-soils than seeds which have matured in these poorer soils? The answer must be found in a comparison of results regarding earliness, productiveness, vigor and quality of the products. The conditions at the station are favorable to the work, and last year seeds were gathered from the best of those vegetables that seeded. The ground in which they grew is not a rich garden-soil, but only an ordinary farm-soil. These seeds were planted this year (1889) along with seeds of the same

Fig. 22.—Clematis brevicaudata.—See page 138.

* Clematis brevicaudata was described when it first flowered in America as Clematis Pierotii, another Asiatic species, GARDEN AND FOREST, i., 357.

varieties from the seed houses of Landreth, Dreer, Thorburn and others. In March the seeds were examined and careful weights taken of one hundred seeds of each variety. It appears from the tables that in nearly all the varieties of Tomatoes and Radishes mentioned the station-grown seeds were heavier than those from the seed houses, while those of the Lettuces in the majority of cases were lighter. Following this examination a test of the germinative values was made by putting one hundred seeds of each variety in the germinators. These results, given in the tables under the heading 'per cent. sprouted,' are slightly in favor of the station seeds in case of Radishes, but against them in that of the Tomatoes."

The tables referred to contain all the observations made upon the plants during the growing season. It did not seem wise to draw conclusions from the records of one season, knowing how variable individuals are apt to be. The strongest indications of the tables were noted at that time as follows: "(1) The station seeds were, as a rule, heavier than the purchased seeds. (2) The weight was no indication of the germinative value of the seeds. (3) In the majority of cases the earlier marketable products were obtained from purchased seeds. (4) The greater yield, with but few exceptions, was obtained from purchased seeds. (5) Lettuce from purchased seeds produced heads that did not shoot up to flower as early as the plants from station seeds. (6) Radishes from purchased seeds were larger, more tender and more uniform than those from station seeds. (7) On the whole the results are strongly in favor of seeds from good soil, however rich that may be."

Some of these indications have been so strongly corroborated by subsequent investigations that we are tempted to name them conclusions. The germinative value of the seeds was generally higher with the station-grown seeds as tested in the germinators, but as many germinating seeds fail to vegetate in the soil, an experiment was made to test the relative values as to this point last year. It will suffice here to give the figures of the Tomatoes only, as they are emphatic on this point, and their behavior throughout is to be preferred in this discussion, since we must consider individual plants. The ultimate regard of the Radish is for the root, and of the Lettuce is for the head, while of the Tomato it is for the fruit, thereby implicating both root and stem in the production of the fruit. The following figures show that, with but two exceptions, the station seeds possessed the highest vegetative power. Seeds were sown in shallow boxes filled with good soil March 14th, and again March 25th of the following varieties of Tomatoes, using one hundred seeds of each variety, and noting carefully all that developed into good plantlets:

TOMATOES.	March 14th.		March 25th.	
	Landreth.	Station.	Landreth.	Station.
Acme	41	50	..	..
Golden Trophy	30	25	38	40
Livingston's Beauty	21	36	..	..
" Perfection	20	60	16	48
Mikado	45	80	..	..
Paragon	21	37	..	..
Trophy	25	21	20	50

These figures are, indeed, very much one-sided, but they concern a point of no serious moment to either the gardener or farmer. Seeds are cheap, and he can afford to sow three or four seeds to get one plant. Success in growing small plants from seeds depends largely upon the kind of care they receive. Thus would he dismiss the question. But what about the yield of marketable fruit? The third indication was strongly emphasized in the results of 1890 and 1891—namely, that "in the majority of cases the earlier marketable products were obtained from purchased seeds." The plants were all treated alike, in the hot-bed and in the field; yet, with but few exceptions, those from purchased seeds each year blossomed earlier by several days. In 1890 six out of seven parallels of as many varieties ripened earlier fruit by several days on plants from purchased seeds, and in 1891 five out of seven parallels indicate a similar result. Earliness is a matter of great moment to the market-gardener, because of the better prices obtained for first fruits.

A most peculiar coincidence lies in the fact that in almost every instance the heavier yield is associated with the later-appearing fruit, and is almost always with the plants from station-grown seeds. Thus:

Golden Trophy—Purchased seed, first ripe fruit July 30th; total yield of three plants up to time of frost, 11,143 grammes.

Golden Trophy—Station seeds, first fruit August 5th; total yield, 14,809 grammes.

Livingston's Perfection—Purchased seed, first fruit July 27th; total yield, 19,255 grammes.

Livingston's Perfection—Station seed, first fruit August 7th; total yield, 29,170 grammes.

In point of yield, therefore, the above figures (which are only representative cases from records) rather tend to favoring station-grown seeds, although the reverse seems to have been the indication for the first year. In a careful comparison of individual fruits it was found that the tomatoes from station seed attained a greater average weight and size and were generally possessed of thicker walls and more flesh throughout.

It should be added that the seeds used in every year of this experiment were taken from the original packages. Therefore the influence of climate upon the production of the seed is practically a fixed quantity, and the ages of the seeds remain relatively the same.

Thus far in the experiment two important conclusions seem to be strongly warranted by facts and figures regarding tomatoes:

1. Plants from purchased seeds yield earlier fruit than those from home-grown seeds.

2. Plants from home-grown seeds produce more abundantly than those from purchased seeds.

State College, Pa. *Geo. C. Butz.*

The Greenhouse Under Trial.

WHEN arranging the greenhouse, the details of which were given in this journal (vol. v., p. 6), there was some doubt as to whether the two sections could be preserved in practical independence. It will be remembered that the design was to provide an intermediate house with a temperature of fifty degrees, and a cool section with a temperature of thirty-five to forty degrees, united under the same roof and partly open to each other. To provide comfortable quarters for a variety of plants is always a problem to the amateur whose taste takes anything like a free range. The greenhouse-plants are not especially difficult to arrange, for even in a small house one can usually find a suitable place for tender ones, but to arrange for those which must be wintered at a low temperature ranging to just above the frost-line is not so easily managed. The warm section has been rather improved by the change, being made more airy, while the temperature at night has been readily kept at from fifty to sixty degrees. When the north wall has been raised about three feet and steps have taken the place of the present north bench, I cannot at present see how any further arrangement could add available plant-room in the space. The annex has shown more vagaries of temperature, as this has been more influenced by outside weather, but during cold nights there is usually an extreme difference of twenty degrees in the two sections. The cool end of the annex is usually forty degrees and under, and the thermometer has often registered thirty-two degrees there.

This has been a good place to store Auriculas and other plants which should be kept nearly or quite dormant. As a matter of fact, this end was full of dormant plants, while within a dozen feet Cattleyas were brought into bloom; this, it will be remembered, with no partition between. The difference of elevation will, of course, account for a large portion of difference in temperature of the unheated section. As the door of the furnace-room is opened at night the end nearest this is the warmest, but this warmth does not make much impression on the solid bed. This bed is on the level of the garden, and the water from outside works up from below, keeping it cool, so that Carnations, Roses and Pansies planted out have made very little progress. Unless some arrangement was made for draining this bed thoroughly or for keeping the water out, it would probably become sour and unfit for use for planting out, and it would be better in any event to use it as a bed for plunging plants in pots. Pansies, Violets and Carnations, in pots, would be happy there. It has proved a capital cool bottom on which to stand pots of bulbs to come forward gradually, the flowers from these being much better and more lasting than if brought forward in more warmth. Some shelves near the sash furnish convenient places to arrange the pots when plants are in flower, or to store those which are averse to moisture. The bed being very wide the outer edge is used for the storage of Chrysanthemums which have come on slowly. At present a few Genistas, Azaleas and Easter Lilies, in pots, are slowly making ready to expand their flowers for the Easter-season. These latter, however, require rather more heat, and, after being well started, are properly brought forward in the warmer house.

While the expansion of the house has doubled its capacity and given the greater range of temperature, the necessary care has increased very little beyond the oversight of more plants. But as most of these were formerly relegated to a cold frame, the care has been actually less than before. The fire has been no more care, while the cool house during the winter requires very infrequent waterings. Of course, no one could devise a greenhouse which would be entirely satisfactory to another, and these details of some experiments are offered only as suggestions, which may possibly be helpful to persons with requirements somewhat similar to mine—i. e., a small house, with a wide range of temperature, which need not be a great care.

Elizabeth, N. J. *J. N. Gerard.*

The Flower-garden.

IN the best gardens it is found that hardy perennials alone are not as satisfactory as when plants of other characters are judiciously mingled with the permanent occupants of the border. Many hardy plants flower early and die down at midsummer, and something must be provided to take their place, if for no other purpose than to cover the ground for the remainder of the season. The easiest way to do this is to sow, or plant, annuals in the vacant spaces, to fill up the gaps, and perhaps to render other services which we have not taken into account. On this side of the Atlantic we have as yet heard nothing of the dread disease that attacks Narcissus-bulbs, known as basal-rot. No doubt our drier summers, which prevent superfluous moisture around the bulbs during the resting period, enable them to enjoy a marked season of rest after the foliage begins to die down. To do this, European growers sometimes have to lift their stock of certain kinds to ensure thorough ripening and complete rest, and American cultivators sometimes ask if it is necessary to lift the bulbs annually, the impression that it is being probably derived from foreign periodicals and practice. It has never seemed to me essential to lift any bulbs except for purposes of division; and perhaps on retentive soils, which hold considerable moisture even in dry weather, the planting of annuals over them may have an excellent effect by appropriating this surplus water and such nutriment as the bulbs are unable to assimilate when at rest. Last year China Asters proved a complete success over the Narcissus-bulbs, the latter commencing to make new roots when the heavy fall rains came that put an end to the Asters.

The basal-rot is, unfortunately, only too common here among certain species of Lilies. When lifting a refractory kind we have too often seen it tumble apart, leaving but a few of the inner scales adhering to the root-stock. Lilium excelsum, L. Brownii, L. Pyrenaicum and the non-rhizomiferous Californian species are well-known instances, as too many of us can testify. This disintegration must not be confounded with the Lily disease proper, which is quite another thing. If planters would try these delicate Lilies among other plants, even among the dwarfer shrubs, where they would have to fight more or less for an existence, the results would be far more satisfactory. I have seen L. Pyrenaicum (a most refractory kind) naturalized among rank grass, holding its own year after year and filling the air with its fragrance. Lilies are not exacting in their demands, and I think we usually err in kindness to them. We give them rich soil when decayed leaf-mold would be better, and we keep the soil about them religiously free from plants that would shade the surface of the soil, and keep it moist in hot weather, and absorb by root-action any superabundance of moisture when the bulbs are resting.

Besides strictly bulbous plants there are many herbaceous ones which die down early, such as the beautiful Corydalis nobilis, so rarely seen in gardens; Mertensia Virginica, the Oriental Poppies, all Trilliums, some of the Dicentras and Ranunculus. With a little forethought and less trouble, at least two distinct effects should be obtained in a border planted with hardy plants. The plants to use will readily occur to those who wish to try the plan;—Asters, Zinnias, Stocks, Mignonette, Candytuft, annual Poppies and Larkspurs, with such summer-flowering bulbs as Gladiolus, Tigridias, Milla biflora, Tritomas and Montbretias, these latter being lifted and stored in the cellar in fall.

South Lancaster, Mass. *E. O. Orpet.*

Petunia Blight.—In a large commercial propagating-house it was lately observed that many of the Petunias in small pots looked yellow and unhealthy. A microscopic examination of the diseased leaves proved that they were infested with a genuine leaf-spot fungus (Ascochyta Petuniæ). Frequently the leaf is attacked near its centre and the fungus spreads rapidly in all directions, often in such a way as to exhibit a number of well-defined rings in the infested area. The spores are produced in vast numbers in spherical bodies, each with a small opening at the middle of the exposed side, and from which the spores stream in a serpent-like coil when a dry leaf is placed in water. Examination of other dead leaves showed a second fungus, differing in several respects from the Ascochyta, but in nothing more than in the spores. These, instead of being of the shape of a figure 8, are long and slender, often somewhat curved. This offender is a Septoria, which seems to be new, and it is likely to wear the name of S. Petuniæ. Both of these fungal enemies were doubtless in the stock plants from which the cuttings were taken, and a large part of the difficulty would be obviated by using healthy mother plants. From the nature of the troubles it is evident that the diseases could be held in check by the standard fungicides if taken in time.

Rutgers College. *Byron D. Halsted.*

Success with Lilies.—The largest and finest bulbs of Lilium superbum I ever found were growing in a reclaimed swamp which had been drained to a moderate depth and planted to Cranberries. The Cranberries failed, and wild grasses and bog-plants were allowed to take their places. The Lilies originally grew in the muck, of which there was a good depth, and this had been covered with about three inches of sand, making in all about six inches of covering, and they were thickly shaded by a rank growth of grass. The largest single bulb of this Lily I ever found was growing by the road-side, where the wash of the road had covered it deeply with coarse sand. This bulb had an immense system of strong roots, and both bulb and roots had that clean white appearance which indicates a rapid and healthy growth. To all appearance this plant had nothing but wet sand to sustain it, but no doubt the washings of the road furnished it with liquid-manure in just that dilute form which best suited it. The best-cultivated Lilies are grown under similar conditions. If a deep furrow is run through well-drained sandy land, and swamp-muck is liberally placed in the bottom, with a light covering of sand, the bulbs can be set on this and the furrow filled in. With a liberal mulch of sphagnum over this the Lilies can hardly fail.

Hammonton, N. J. *W. F. B.*

Correspondence.

Spring's Onset.

To the Editor of GARDEN AND FOREST:

Sir,—Those who watch the outdoor world observed a strange event this year in the sudden arrival of spring. Commonly we are used to some faint and broken preludings of the real season—advances, arrests, retreats. This year there were none of these. The winter has been nearly normal, and showed no fantastic outbreaks of vegetation due to unwontedly mild weather. The Japan Quinces, indeed, threw out here and there a blossom in midwinter, but we are used to these sportive reminders—signs of nothing but a hardy, happy habit. The Willows, before the new year, had wrapped themselves in aureoles of deeper tint than their accustomed winter adorning, but they kept their dull gold unchanged. Such, at least, was our observation on the island of Manhattan, and especially in its noble pleasure-ground, the Central Park, "which," the London *Spectator* has just said, "in another generation will be the most beautiful public resort in the world," the *Spectator* not knowing nor dreaming of the possibility that anybody should plot to convert it into a trotting-course.

On one day the park lay in still winter guise, the guise of February certainly, and not of December—for there is a difference—but distinctly of winter, silent, in a monotony of color. The next morning spring had come, the monotony was broken, the land and all its children stirred and stretched with awakening strength. The "furtive look" had come, the mark of "a purple finger on the slope," the feeling of "a flower expected everywhere," to use Emily Dickinson's phrase. Stems of shrubs were dyed suddenly with brilliant carmine or vivid green. Masses that only the day before had been dull brown across their tops were now suffused with pale pure yellow, difficult to fix as the end of a rainbow, vanishing under close inspection, but from a distance positive and distinct. So had a glow come into the gold of Willows, and the massed tree-tops seen across open spaces and against the sky, soft, deep rose-purple in place of sepia. All this, and much more, actually overnight, if close observation day by day may be trusted. And though such changes are subtile they are unmistakable, and essentially greater than many of larger physical proportions, for they are of character.

Every season we are apt to esteem peculiar, in spite of inexorable records that show general and particular likeness, and it may be unwise to insist too strongly upon the absolute novelty of sudden change such as is here recounted, but in the memory and records of one observer it stands alone. Whenever this change does come, and whether gradually or suddenly, it is one of the most affecting beauties of all the year. The mist of tender color is more enchanting than the gorgeous beauty of which it is the prophecy. And it is not only in itself beautiful, but a marvel and a mystery—a mere hovering haze that flies before one and evades approach; ghost-like, as though it were the spiritual part of flowers first arrived, and waiting uneasily for bodies yet to be.

New York. *J. E. Learned.*

A Freak of a New England Orchid.

To the Editor of Garden and Forest:

Sir,—It was on the first day of August, in the course of an idle tramp of an hour or so, in the midst of a shady mosquito-haunted bog, where the smaller purple-fringed Orchids were blooming in abundance, that I was almost electrified by the sight of a stately spike of brilliantly white flowers just before me. With the eagerness of an amateur botanist I gathered this solitary specimen, jumping at the conclusion, as usual in such cases, that it was certainly something never before reported in this locality. On examination, it bore a rather humiliating resemblance to the Habenaria psychodes, in whose company it was found; but the height—two feet nine inches—and length and diameter of the spike far exceeded those of any of its humble relatives. It was a magnificent specimen, in perfect flower, and the petals and sepals were certainly larger than those of any of the orthodox H. psychodes. Then, too, the lip was in a horizontal position, at right angles with the erect upper petals. With these exceptions, the flower was identical, even in odor. It is to be remembered, of course, that it was pure white.

The question is, What was it? If the fringing of the lip had only been capillary and the spike a little looser, it would have passed for H. leucophæa, as described in Gray's Manual. I am told by good authorities that the fact that it was white counts for nothing, and the fact that it was growing in company with H. psychodes is presumptive evidence that it was simply an albino of that species. Other good authorities say that, while this is the natural supposition, it is possible that it is a hybrid—perhaps of H. lacera and H. psychodes. I have seen white Pogonias, heard of white Cypripediums (acaule), but never heard of a white Habenaria psychodes. Of course, they are found in deeper and lighter shades of purple, but has anybody ever found one pure white?

Norwich, Conn. *J. T.*

Periodical Literature.

In a paper recently read before the Torrey Botanical Club, in this city, and reprinted in the *Bulletin* of the club for March, Professor Byron D. Halsted says that during the past two years a large number of variegated plants have been examined with reference to the presence of parasitic fungi, attention having first been called to the subject "by a study of the foliage of a variegated Ash, which had its leaves badly spotted with a species of Coniothyrium, while ordinary Ash-trees were free from the same fungus." He gives an alphabetical list of fifty genera, including more than a hundred species of variegated plants, both hardy and grown under glass, which had been found specially subject to the attacks of fungi. The author says that it is not his purpose to enter into the causes of etiolation or variegation, or to draw well-defined conclusions from the facts which he presents. But he adds that the ordinary green forms of many species have also been studied, with the result of showing that they are much less frequently attacked than the variegated sorts. Furthermore, in some plants the etiolated part occupies large portions of the leaf, and, as a rule, the portions without the chlorophyl are the most susceptible. In the Aspidistra, for example, the one-half of the long leaf may be green and the other white, in which case the latter is with few exceptions the only one attacked. In the Hydrangea the middle of the leaf is etiolated, and here the blight first begins its destructive work. In other plants, where the white is distributed in blotches near the margin of the leaf, the decay due to the fungus produces a ragged edge. And when the variegation is quite evenly distributed over the leaf the parasite is widely scattered and the whole leaf decays, as in Dieffenbachia and Abutilon. The author concludes: "There seems to be no question that the variegated leaves are more susceptible to parasitic fungi, and that likewise the etiolated parts are the ones first attacked. The absence of green in a leaf is a source of weakness. Speaking generally, a variegated plant lacks capacity for the best work, and the gardener, in propagating a variegation, no matter how it may have originated, is propagating a weakened plant in so far as it has had its normal amount of chlorophyl reduced. It is a pity that so many of our choicest variegated plants blight easily; it is, however, natural that they should do so. Even a fungus parasite will take the line of least resistance."

We may add to this interesting communication that it does not seem a great pity that variegated-leaved plants should have characteristics which may gradually discourage that love for them which is so marked among amateur horticulturists, and, unfortunately, among some landscape-gardeners as well. Except as curiosities to be preserved in a greenhouse or used in the decoration of a room, variegated forms are seldom as attractive as the more normal forms from which they have originated, or, we may truthfully say, deteriorated; and their excessive use out-of-doors is one of the evils against which true lovers of landscape beauty have to protest. In formal gardening arrangements a discreet taste can employ them with good effect; but in the naturalistic arrangements, which are much more common in the present day, very discreet, indeed, must be the taste which can use them without injury to the repose, harmony, unity and simplicity that should characterize a landscape. In most European countries they are still more profusely employed than here; but even here we too often see lawns and plantations disfigured with many crude spots of variegated color where the eye would be far better pleased by the gentler variety which different shades of green can give.

Recent Publications.

The Formal Garden in England. By Reginald Blomfield and F. Inigo Thomas. London: Macmillan & Co., 1892.

There has long been great need of a good book in the English language on formal gardening. The one which Mr. Blomfield has recently written, and which Mr. Thomas has illustrated, is interesting, and in certain respects is instructive; but it will not adequately fill the empty place on our shelves. It will do little to convince narrow devotees of the "natural style" of gardening that the formal style has its merits also, and still less to explain to those who already believe this fact under what conditions each style is appropriate, or even what is the essential difference between them. This is because its author has written not in an impartial spirit, or even as a fair-minded advocate. He stoutly denies that there is or ever has been such an art as landscape-gardening, and implies that in the nature of things there can be no such art. Formal gardens, he says, are designed; grounds treated in other ways are not designed, and only make a pretense of being designed. He condemns the narrowness of landscape-gardeners, and proves himself narrower than any of them. He carefully notes their follies in act and word, but as carefully abstains from any mention of their worthy work or even of the problems which afford them their best opportunities. He perpetually goes out of his way to assert that landscape-gardeners have ruined whatever they have touched, but he never explains how their larger undertakings might be better managed. The only passage in his book which even grudgingly admits that the landscape-gardener as well as the designer of formal gardens has his place in the world, is the one where, after saying that formal gardens do not need to be very large, he adds, "If either style wants room, it is the landscape, for unrestricted space is of the essence of natural scenery; and, indeed, the only places where its use appears tolerable are gardens such as those of Chatsworth, where the grounds are so large that there is a real suggestion of scenery *sui generis*, as of a wood in which clearings have been made and the grass kept carefully trimmed." In short, Mr. Blomfield's preferences are so narrow, his temper toward everybody and everything unapproved by these preferences so bitter, his arguments so one-sided, and his descriptions of the aims and ideas of the landscape-gardener so disingenuous, that his book is likely to do more harm than good to the cause which he has so warmly at heart. He could have pleaded the cause of formal gardening design much more effectively had he shown us first where and how landscape-gardening can produce good results and then where and how it cannot, instead of assuming that it has never produced a really good result, and in the nature of things never can.

The historical passages of his book are interesting when one can ignore the writer's underlying mood. They give in a compact shape a great deal of information hitherto scattered

through books which are inaccessible to the general reader. The illustrations add greatly to the value of the text, although they do not always prove its assertions. They seem to show that English gardens, before French influence had extended them into parks and planted them with dense groves and mighty avenues of long extent, must have been pretty spots to look at, excellent spots in which to grow pretty flowers, and good accompaniments for architectural effect to the houses which face upon them; but that the excellence in design, of which we read so much, was of a very rudimentary and naïve sort except as regarded absolutely architectural features. Terraces and walls appear to have been well imagined and constructed, but nothing that can be called an architectural treatment of trees and of large areas of water and grass appears to have been attempted until the advent of French fashions. The garden areas themselves were small, and their design consisted simply in the perpetual repetition of the simplest geometrical figures. They were undoubtedly good gardens, and gardens of the sort which were most appropriate to houses of the usual English kinds. But they were not great works of art like the gardens of Le Nôtre and his immediate followers. Mr. Blomfield's chapters are a little confused in arrangement, and it is not always easy to put the right date upon the things which he describes; but the general impression left by his book is that the advent of French influence first developed garden design in England into an important art. Best of all are the chapters which discuss in succession the different features of old gardens, and here we often come upon very good bits of advice. For example, the author wisely counsels the use of stone or leaden statues and ornaments instead of white marble ones, which are too glaring for the English climate, and bronze ones, which are too sumptuous in effect except amid very splendid surroundings. He is right, too, when he says that clipped shrubs and trees are not more unnatural than many other things which we admit into our natural gardens, although he exaggerates in saying that they are as natural as clipped grass. The ordinary processes of husbandry and pasturage have accustomed our eyes to surfaces where the grass is cropped short, but not to trees cut into stiffly symmetrical forms. Such trees may have their place in art, however, and we only wish that Mr. Blomfield had defined this place more intelligently for the instruction of those who deny that it exists. We wish also that, while protesting against that degeneracy in topiary work which followed the introduction of Dutch gardening fashions, he had not himself chosen to admire one very Dutch example of which he gives an illustration. Trees and shrubs may be clipped upon occasion, but never into the likeness of a wall upon which are perched two colossal doves. Nor will all the architectural and sculptural features of old gardens which the illustrations reproduce ever gratify a taste that cares for purity in outlines and for vigor combined with delicacy in the treatment of details.

In speaking of grass-theatres Mr. Blomfield cites no existing example, but says that "in the gardens of the Prince Bishops, of Wurzburg, there was a famous amphitheatre formed of banks of turf with clipped hedges for scenery." He may be interested to learn that in the Grosser Garten, at Dresden, once a royal but now a public park, such a theatre still exists in good preservation. It lies between two of the main avenues, hidden from sight by thick masses of trees, and is approached by a narrow path. This path cuts it through the centre, the ranges of turf-seats rising on one hand and the turfed stage on the other, surrounded by masses of foliage, which were probably once more closely trimmed than they are to-day, and ornamented with moss-grown statues of gray stone—Rococo works, which are pretty bad from the sculptural, but very effective from the decorative point of view.

Chemicals and Clover. This is a little pamphlet by H. W. Collingwood, one of the editors of the *Rural New Yorker*, and the part of it which has real value is that which records the success of certain New Jersey farmers who practice the following four-year rotation of crops: Potatoes are planted on ground where Corn has been grown the year before, with a thousand pounds of some so-called complete fertilizer to the acre sown broadcast before planting and five hundred or more pounds later in the drill. In the fall the Potato-ground is plowed and seeded with Wheat and Timothy, and Clover is sown in the spring. The next year the hay is gathered, and in the third year of the rotation, after the hay is cut, all the stable-manure made on the farm is hauled out and spread on the sod, and the aftermath is allowed to decay on the ground. Next spring the land is plowed and the ground planted to Corn, which finds abundant nourishment in the decaying sod. The principle of this system is that the heavy dressing of chemicals on the Potatoes not only yields a profitable crop, but leaves the soil sufficiently fertile to give a crop of Wheat and Grass. The stable-manure helps to make a heavy sod, and the Corn is able to appropriate the coarser part of the food by its strong digestion. As little stock is kept as possible outside of the working teams, and no particular pains is taken to increase the amount of stable-manure. We apprehend, however, that there is little danger of having too much of this on the sod; and the stable-manure does not deserve the depreciating tone in which it is alluded to.

It is quite true that in many cases it is cheaper to purchase and apply a given amount of nitrogen, phosphoric acid and potash in commercial fertilizers than it is in stable-manure, and in some cases the same amount of these in chemical fertilizers will show quite as good results as it would in well-rotted stable-manure. In other cases in our own experience plant-food in chemicals has not been relished by crops as well as the same food in well-decayed and well-fined stable-manure. It may be that, apart from the plant-food in stable-manure, it furnishes a nidus wherein are multiplied those microscopic organisms which science has found to play so important a part in the growth of plants. Some old market-gardeners on Long Island will not haul stable-manure from the station to the farm if it were given to them. They say it is cheaper to buy chemicals and to apply them alone than it is to transport and apply the bulkier material. But, then, in these old gardens tons of manure have been used on every acre annually for a generation, until the ground is filled with carbonaceous matter left by old applications from the stable, so that the nitric ferment and other bacteria which are helpful to plant growth may already occupy the ground in sufficient numbers. This, however, is only a surmise, but the fact remains that our knowledge of the processes by which plants avail themselves of the materials for their development which are found in air and water is very limited. There is no doubt that so-called artificial fertilizers are destined to a wider use in the future as we learn how to use them to better advantage, and the accurate records of any experiments with them are always worth preserving.

Notes.

In Mr. Blomfield's *Formal Gardening in England* he tells us that during the War of Independence many of the leaden figures which ornamented old English gardens were exported to this country, nominally as works of art, but really to be melted down and cast into bullets.

In Ellwanger & Barry's general catalogue, in addition to the classified list of Roses, where the different families are separated with unusual care, there is a valuable alphabetical list including about 350 of the leading sorts in cultivation, in which the class to which each individual belongs is indicated by abbreviations.

Last week Mr. Gerard sent to this office flowers of Iris Bakeriana and of I. histrioides which had been snowed under twice. In spite of the severe weather, they looked perfectly fresh and bright, and exhaled a distinct Violet odor. These early Irises are among the most attractive of the flowers which brave the frosts of March.

A Philadelphia correspondent of the *American Florist* says that Mr. C. D. Ball has remarkable success with Lilium longiflorum, which he grows in quantity for Easter decoration instead of L. Harrisii. The flower of the former has more body, so that it will endure longer, especially if it is warm, as it often is at Easter-time, while the erect habit of the flowers makes them easier to ship. Most persons consider it more graceful than the Bermuda Lily.

So careful are the Japanese in their study of what is appropriate and inappropriate in the arrangement of flowers, that they would not use even a small metal stem-fastener without considering the character of its design. A fastener in the shape of a frog, for instance, may be used with both land and water plants, but one in the shape of a hare, especially suitable for use with wild plants and grasses, would never be affixed to water plants, and one in the shape of a pair of carps is reserved for water plants alone.

The exhibition of the Pennsylvania Horticultural Society next week promises to be one of exceptional interest. The large private collections in Philadelphia and its neighborhood are always represented by choice plants, and the local commercial growers have an enterprise and public spirit which is seen at its best at these exhibitions. Mr. Blanc will make such a

display of Cacti as can be seen nowhere else in this country, and a feature of great interest will be a contest for the premium offered for Mushrooms.

The last bulletin from the South Dakota Agricultural College Station relates to the growing of the Sugar Beet, and it is stated that with proper cultivation these Beets, with a high percentage of sugar, a good purity co-efficient, a large yield per acre, and in every way adapted for the manufacture of sugar, can be grown throughout the greater portion of that state. A report from the Experiment Station of Wyoming also adds that the dry cool autumn of the arid region there tends to store sugar in the beets, which will grow well where a slight summer irrigation can be given to the crop in a mellow soil.

A new Violet, burdened with the name of Frau Hof Gartendirektor Jülke, and said to be a cross betwen Lee's Queen Victoria Violet and V. Rossica superba, was introduced a year ago by a German florist. The *Gardeners' Chronicle* quotes some Continental authority who pronounces this the pearl of all existing varieties. It is not furnished with runners, and the leaves are of a glittering green color, which is a particular merit. The flower-stalk is long, the flowers larger than those of the Russian, the color light blue, the fragrance powerful, and in floriferousness it exceeds all other known Violets. Placed in the greenhouse or in a cold frame in the autumn, it continues to bloom, and if at the end of the month of December or beginning of the new year it can have the warmth of an intermediate house, its season of flowering will be extended into the spring. The cultivation of the plant is identical with that commonly pursued with Violets.

The notorious Italian slum in this city, which is called Mulberry Bend, will be torn down shortly, and the space it covers will form part of a new park, consisting of an irregular plot bounded by Park, Mulberry, Bayard and Baxter streets. Baxter Bend, an equally ill-favored quarter, will also disappear, and the new park will touch the corner of that little triangular breathing-space which was established when the Five Points district was partially redeemed some years ago, and which surely bears the most oddly optimistic name of any such spot in the world—Paradise Park. The price which the city will have to pay for the new park will be very large, for land upon which so many human beings are crowded commands at least ten dollars a square foot, and often more than twice that amount; but no money will be wasted if it insures another playground for the very poor, and at the same time the destruction of the vilest rookeries which disgrace New York. And yet, with a strange inconsistency, while New York is spending a million and a half of money to make room for a little turf and a few trees here, some of her leading citizens are beseeching the Legislature for the privilege of covering up Bryant Park with a huge municipal building, others are trying to confiscate City Hall Park for the same purpose, and others still are endeavoring to destroy Central Park itself in the alleged interest of the American trotter.

At the last convention of the American Forestry Association Mr. Gifford Pinchot read a paper on the history of forest-policy, from which we quote the following: "The spirit of the recent Swiss forest-legislation is one which must permeate our own coming forest-laws if they are to win that acceptance with the people without which they must be worse than useless. It has been summarized as follows by Professor Landolt: 'Our forest-laws are intended to work more through instruction, good example and encouragement than by severe regulations. This method is somewhat slower than one which should involve more drastic measures, but the results achieved are more useful and lasting. When forest-proprietors do something because they are convinced of its utility, it is done well and with an eye to the future; but what they do under compulsion is done carelessly and neglected at the first opportunity. What they have come to learn in this way, and have recognized as good, will be carried out, and that better and better from year to year.' This homely statement of the great Swiss forester is full of the wise moderation of a man conscious of the dignity of his work. Successful forest-reform, here as there, must be a growth from the education of the people, finding its expression in laws which respect both the needs of the forest and the needs of the people, and which waste no time in mistakes. Such legislation is respected, because it is capable of being enforced. The results of it are so large, it is so surely a part of the future, that the friends of forestry in America ought to work for it with the steady vigor of men who know they are going to win."

An account of that district of southern France which is called the Camargue, recently published in the *Revue Industrielle*, shows how extensive and how successful are the works of irrigation undertaken by the French Government. This district occupies the triangular space formed by the two branches of the Rhone in their course between the point of forking and the Mediterranean, and although in mediæval years it contained important seaport-towns, for generations it has been a malarious waste, where the ancient cities presented astonishing pictures of death and decay, and where the boundless fields were given over to wandering herds of half-savage cattle. The district being really an island, composed entirely of alluvium brought down by the river, it was often partly overflowed; so the first need was to build dykes to protect it. Then ditches were dug and pumps set up for the removal of the water which soaked into the soil beneath the dykes, and this water was thrown into a great basin called the étang Valcarès, which was furnished with an outlet to the sea. Then, as the land would thus have been rendered too dry, irrigating canals and pumps were established to bring in water from the Rhone at the upper part of the territory, and as by this means certain portions could also be flooded if desired for the destruction of the phylloxera, large plantations of the Vine were made. The climate is excellent for grape-cultivation; pasturage also became profitable, and certain new plants, among them the Australian "Salt-bush," have been introduced with a prospect of commercial success. Thus, according to the *Revue*, a desert region dangerous to health has been transformed into a fertile stretch of country which is rapidly growing more and more populous, and a network of railways has been begun to develop its resources to the full.

In the last number of *Agricultural Science* there is an account of a new edible Blackberry, by Professor Bailey, which, in honor of Dr. C. F. Millspaugh, who collected it at an altitude of 3,500 feet in West Virginia something more than a year ago, is called Rubus Millspaughi. It is a bush Blackberry with long wand-like canes and destitute of thorns. Dr. Britton, who named it, knew of no other specimens than those of Millspaugh except a single leaf of it in Linnæus' Herbarium, in London, collected by Kalm more than a century ago. Professor Bailey thinks, however, that it is generally distributed over the northern and eastern states, since he has had good specimens of it from the Big Smoky Mountains, in North Carolina, at 6,000 feet altitude, and he knows of other specimens from the White Mountains, and the Keweenaw Peninsula, Lake Superior, so that it would appear that the species grows upon our northern borders and follows the mountains southward, which accounts for the fact that Kalm found the specimen in Canada. This Blackberry has some importance to horticulturists on account of its thornless canes. The so-called thornless Blackberries of gardens are nothing but comparatively unarmed forms of Rubus villosus. The fruit of this plant is said to be good. Mr. Kofoid, who collected it in North Carolina, writes that as late as August 29th the fruit was just ripening to a faint reddish tinge, and was quite palatable even then. The natives say that the fruit ripens in September. The berries are large, long, slender and sweet, lacking the acid and bitterish quality of berries on the lower mountains. Besides the absence of thorns, which distinguishes this species from Rubus villosus, it lacks the pubescent character of the common species, the leaves are thin, the leaflets sharply toothed and prominent; on vigorous shoots the leaflets are five, and the three upper ones have stalks from one to two inches long.

Catalogues Received.

The De Laval Separator Co., 74 Cortlandt Street, New York; Cream Separators.—M. V. Dickens, Trumansburg, N. Y.; Fruit and Ornamental Trees, Grape Vines, Small Fruits, Shrubs, Roses, etc.—T. J. Dwyer, Cornwall, N. Y.; Choice Small Fruits, Trees, Shrubs and Vines.—Ellwanger & Barry, Rochester, N. Y.; Small Fruits and Fruit Trees, Ornamental Trees, Shrubs, Pæonies, Hardy Border Plants, Roses, etc.—Hilfinger Bros., Fort Edward, N. Y.; Trade Price-list of Standard Flower Pots, Vases, Seed Pans, and Cylinders for Cut Flowers.—Harlan P. Kelsey, Linville, N. C.; Special Spring Offers and Wholesale Catalogue of Native Trees, Flowering Shrubs and Herbaceous Perennial Plants.—Jacob W. Manning, Reading, Mass.; Descriptive Illustrated Catalogues of Some Recently Introduced Trees, Shrubs, Vines and Hardy Herbaceous Perennials; Large and Small Fruits; Ornamental Trees, Shrubs and Climbing Vines; Choice Hardy Perennials.—Pitcher & Manda, Short Hills, N. J.; Special Importation of Orchids.—O. M. Richardson, Canton, Oxford Co., Me.; Northern-grown Flower and Vegetable Seeds.—Texas Pecan and Seed Co., Fort Worth, Texas; Pecan Nuts for Seed.—David G. Yates & Co., Germantown Ave., Philadelphia, Pa.; Evergreens, Ornamental and Fruit Trees, Shrubs, Roses, Greenhouse and Bedding Plants.